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EXAMINER

ZHENG, LOIS L

ART UNIT PAPER NUMBER

1742

DATE MAILED: 05/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/601,247

Applicant(s)

TANG ET AL.

Examiner

Lois Zheng

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3 and 5-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3 and 5-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Status of Claims

1. Claims 2 and 4 are canceled in view of the amendment filed on 10 March 2005.
New claims 9-10 are added in view of the amendment.
Therefore, claims 1, 3 and 5-10 are currently pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushima et al. US 4,017,334(Matsushima) in view of Briles et al US Patent Application Publication 2003/0150525(Briles).

The applied Briles reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and

Art Unit: 1742

reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Matsushima discloses a process for treating aluminum with a coating solution comprising phosphate and fluoride (abstract). The coating solution may also include a polyphosphoric acid (i.e. organo-phosphonic acid,) such as 2-ethylhexyl acid phosphonic acid (i.e. straight or branched alkyl phosphonic acid) (col. 3 line 65 – line 4 line 11) .

The preamble “for forming a chromate-free, corrosion resistant coating on a product formed from magnesium or a magnesium alloy” is construed as bearing no patentable weight since it is merely an expression for intended use. See MPEP 2111.02.

However, Matsushima does not teach the claimed vanadate ions in the coating solution as recited in instant claim 1.

Briles teaches a process for treating magnesium or magnesium alloy surfaces with a chromate-free coating solution comprising phosphate ions, fluoride ions and sodium vanadate as corrosion inhibitor (abstract, page 2 paragraph 0021).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the vanadate of Briles into the coating solution of Matsushima as corrosion

Art Unit: 1742

inhibitor in order to improve the humidity resistance as taught by Briles(page 2 paragraph 0021).

4. Claims 3 and 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushima in view of Briles, and further in view of Tomlinson US 5,380,374 (Tomlinson).

The teachings of Matsushima and Briles are discussed in paragraph 3 above.

However, Matsushima in view of Briles fail to disclose the claimed nitrilotris(methylene) triphosphonic acid(NTMP) as recited in claim 3 of the invention.

Tomlinson teaches a conversion coating method for treating aluminum, ferrous and magnesium alloy material(abstract, col. 2 lines 17-21). The coating solution comprising fluoride and phosphates(abstract). Tomlinson further teaches the addition of a crystal deformation agent such as nitrilotris(methylene) triphosphonic acid(NTMP) in a preferred amount of 50-200ppm(abstract, col. 5 lines 23-30, claim 24)

With respect to claim 3 of the instant invention, it would have been obvious to one of ordinary skill in the art to have incorporated 50-200ppm nitrilotris(methylene) triphosphonic acid as disclosed by Tomlinson into the coating solution of Matsushima in view of Briles as the organo-phosphonic acid in order to provide a more uniform coating surface texture and to enhance paint adhesion as taught by Tomlinson(col. 5 lines 23-28)

With respect to claim 5 and new claim 9 of the instant invention, the amount range of 50-200ppm of NTMP as disclosed by Matsushima in view of Briles and

Art Unit: 1742

Tomlinson reads the claimed 10ppm to 0.5 wt% of corrosion inhibitor as recited in instant claims 5 and 9.

With respect to claim 6 and new claim 10 of the instant invention, Matsushima further teaches that the fluoride concentration should be in the range of 0.1 – 10g/l and the phosphate concentration should be in the range of 0.05 – 50g/l(col. 3 lines 54-64), which substantially overlap the claimed 1-50g/l of phosphate ions and 1-10g/l of fluoride ions. Therefore, the concentrations of phosphate ions and fluoride ions in the coating solution of Matsushima in view of Briles and Tomlinson meet the limitations of instant claims 6 and 10.

With respect to claim 7 of the instant invention, it would have been obvious to one of ordinary skill in the art to have used the coating process of Matsushima in view of Briles and Tomlinson to treat magnesium alloy since Tomlinson teaches that a phosphate ion, fluoride ion, organo-phosphonic acid and vanadate ion containing conversion coating solution can be applied to magnesium alloys(col. 2lines 16-20).

With respect to claim 8 of the instant invention, the coated magnesium alloy substrate prepared by the coating method of Matsushima in view of Briles and Tomlinson would meet all the limitations of instant claim 8.

5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushima in view of Oppen et al US 4,264,378(Oppen).

The teachings of Matsushima are discussed in paragraphs 3 and 4 above.

However, Matsushima does not teach the claimed vanadate ions in the coating solution as recited in instant claim 1.

Art Unit: 1742

Oppen teaches a conversion coating composition for phosphatizing aluminum surfaces (abstract, col. 4 lines 1-6). Oppen's coating composition comprising phosphate ions, fluoride ions and vanadate ions (col. 2 lines 42 – 67).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the addition of vanadate ions as taught by Oppen into the coating solution of Matsushima in order to achieve high anti-corrosive protection and good adhesion properties as taught by Oppen (col. 4 lines 16-23).

6. Claims 3, 5-6 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushima in view of Oppen, and further in view of Tomlinson.

The teachings of Matsushima are discussed in paragraphs 3 and 4 above.

The teachings of Oppen are discussed in paragraph 5 above.

However, Matsushima in view of Oppen fail to disclose the claimed nitrilotris(methylene) triphosphonic acid (NTMP) as recited in claim 3 of the invention.

The teachings of Tomlinson are discussed in paragraph 4 above.

With respect to claim 3 of the instant invention, it would have been obvious to one of ordinary skill in the art to have incorporated 50-200ppm nitrilotris(methylene) triphosphonic acid as disclosed by Tomlinson into the coating solution of Matsushima in view of Oppen as the organo-phosphonic acid for the same reason as stated in paragraph 4 above.

With respect to instant claims 5-8 and new claims 9-10 of the instant invention, the claims are rejected for the same reason as stated in paragraph 4 above.

Art Unit: 1742

7. Claims 1, 3 and 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Briles in view of Tomlinson.

The teachings of Briles are discussed in paragraph 3 above. Briles further teaches the presence of phosphate and fluoride ions in its coating composition for treating magnesium or magnesium alloys(see paragraph 3 above), which meets the preamble of "for forming a chromate-free, corrosion resistant coating on a product formed from magnesium or a magnesium alloy" as recited in instant claim 1.

However, Briles fails to explicitly teach the addition of the claimed organo-phosphonic acid as corrosion inhibitor as recited in the instant claim 1.

The teachings of Tomlinson are discussed in paragraph 4 above.

With respect to claims 1-3 of the instant invention, it would have been obvious to one of ordinary skill in the art to have incorporated the nitrilotris(methylene) triphosphonic acid in the amounts of 50-200ppm as disclosed by Tomlinson into the coating solution of Briles for the same reason as stated in paragraph 4 above.

With respect to claim 4 of the instant invention, Briles discloses the use of vanadate in its coating solution(see paragraph 3 above).

With respect to claim 5 and new claim 9 of the instant invention, the amount range of 50-200ppm of NTMP as disclosed by Briles in view of Tomlinson reads on the claimed amount of 10ppm to 0.5 wt% as recited in instant claims 5 and 9.

With respect to claim 6 and new claim 10 of the instant invention, Briles further discloses that the phosphate ions come from potassium phosphate and the concentration for potassium phosphate is in the range of 1.8 – 3.6 ounces per gallon of

Art Unit: 1742

solution(page 2 paragraph 0018), which is equivalent to 13.48 – 26.96 g/L. The fluoride ions are present as sodium bifluoride in the concentration range of 0.4 – 0.7 ounces per gallon(i.e. 2.99 – 5.24 g/L). Therefore, the phosphate and fluoride ion concentrations of Briles in view of Tomlinson overlap the claimed phosphate and fluoride ion concentrations of 1 – 50g/L and 1-10g/L respectively. A prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed phosphate and fluoride concentration ranges from the disclosed range of Briles in view of Tomlinson would have been obvious to one skilled in the art since Briles in view of Tomlinson teach the same utilities in its' disclosed phosphate and fluoride concentration ranges.

With respect to claim 7 of the instant invention, the coating process of Briles in view of Tomlinson to treat magnesium or magnesium alloy using the coating composition of Briles in view Tomlinson meets all the claim limitations as recited in the instant claims 7. The forming of the claimed insoluble salt by the reaction of phosphonic acid and magnesium metal would be inherent in the method of Briles in view of Tomlinson since the coating composition of Briles in view of Tomlinson contains phosphonic acid.

With respect to claim 8 of the instant invention, the coated magnesium or magnesium alloy substrate of Briles in view of Tomlinson meets all the claim limitations as recited in the instant claims 8.

8. Claims 1, 3 and 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bengston et al US 6,692,583 B2(Bengston) in view of Tomlinson

Art Unit: 1742

Bengston teaches a conversion coating composition and a method for treating magnesium or magnesium alloy(abstract). The conversion coating composition comprises phosphate ions, fluoride ions and vanadate ions (col. 2 lines 19-33).

However, Bengston fails to explicitly teach the addition of the claimed organo-phosphonic acid as corrosion inhibitor as recited in the instant claim 1.

The teachings of Tomlinson are discussed in paragraph 4 above.

With respect to claims 1-3 of the instant invention, it would have been obvious to one of ordinary skill in the art to have incorporated the nitrilotris(methylene) triphosphonic acid in the amounts of 50-200ppm as disclosed by Tomlinson into the coating solution of Bengston for the same reason as stated in paragraph 4 above.

With respect to claim 4 of the instant invention, Bengston in view of Tomlinson disclose the use of vanadate in the coating solution.

With respect to claim 5 and new claim 9 of the instant invention, the amount range of 50-200ppm of NTMP as disclosed by Bengston in view of Tomlinson reads on the claimed amount of 10ppm to 0.5 wt% as recited in instant claims 5 and 9.

With respect to claim 6 and new claim 10 of the instant invention, Bengston further discloses that the phosphate ions come from phosphoric acid in the amount of about 10 – about 200g/l(col. 2 lines 53-61). The fluoride ions are present in the amount of about 0.1 - about 200g/l(col. 3 lines 11-20). Therefore, the phosphate and fluoride ion concentrations of Bengston in view of Tomlinson overlap the claimed phosphate and fluoride ion concentrations of 1 – 50g/L and 1-10g/L respectively. A prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed phosphate and

Art Unit: 1742

fluoride concentration ranges from the disclosed range of Bengston in view of Tomlinson would have been obvious to one skilled in the art since Bengston in view of Tomlinson teach the same utilities in its' disclosed phosphate and fluoride concentration ranges.

With respect to claim 7 of the instant invention, the coating process of Bengston in view of Tomlinson to treat magnesium or magnesium alloy using the coating composition of Bengston in view Tomlinson meets all the claim limitations as recited in the instant claims 7. The forming of the claimed insoluble salt by the reaction of phosphonic acid and magnesium metal would be inherent in the method of Bengston in view of Tomlinson since the coating composition of Bengston in view of Tomlinson contains phosphonic acid.

With respect to claim 8 of the instant invention, the coated magnesium or magnesium alloy substrate of Bengston in view of Tomlinson meets all the claim limitations as recited in the instant claims 8.

Response to Arguments

9. Applicant's arguments with respect to claim 1 have been considered but are not persuasive since applicant fails to provide proper evidence that the Briles reference and the instant application were owned by the same entity at the time the invention was made.

10. Applicant's arguments with respect to claim 4 have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 1742

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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